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IN THIS ISSUE

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CONTENTS

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ENDEMIC SYPHILIS IN AFRICA

THE NJOVERA OF SOUTHERN RHODESIA

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The distribution of yaws around the tropical belt of the world is world wide; *pinta* is said to affect more than half a million persons in the Central Americas (Varela and Avila, 1947). The endemic syphilis of Bosnia-Herzogovina, Yugoslavia has been known for a long time, and for the past few years the World Health Organization has been participating in a scheme of mass treatment there. Another variety, the *bejel* of Iraq and Syria, is computed to affect over a million persons (Akrawi, 1949). A condition of like nature probably exists also in Turkey (Willcox, 1951a), and also in Afghanistan. Manson-Bahr (1941) referred to a possibly similar condition in Italian East Africa.

Africa is believed by some to be the original home of man, and by others to be the very fountain-head of the spirochaete. Certainly to-day it is still one of the major world reservoirs of the treponematoses. Although many consider that syphilis and yaws are separate diseases due to organisms of the same medical family, and a few believe that syphilis was introduced into the Old World from the New in 1493 by the mere clutch of sailors on the *Santa Maria* and her two companion vessels, there has been a tendency in recent years to incline more towards the unionist view. It was Hutchinson who remarked, with some justification, as had many before him, that the European brought back syphilis, never yaws, from his sojourn in the tropics.

The unionist view was put forward forcibly by Butler (1936), who attempted to identify yaws with syphilis. He was moved with almost patriotic fervour to throw back the implied stigma that the New World (albeit at that time populated by Natives) had introduced syphilis into Europe. He claimed that the boot was on the other foot and that Europe was herself responsible by carrying the thousands of yaws-infected African slaves in the bottoms of her ships.

The global concept of the treponematoses has been made even more comprehensive by Hudson (1946). This worker, some years before when a mission doctor in Syria, had noted amongst the Bedouin Arabs a spirochaetal disease resembling syphilis but which possessed the epidemiological features of yaws. Hudson has embraced *bejel*, as this disease is called in some places, although it possesses a number of names in the Near East, in his concept, as well as the *pinta* of Central and South America, and a number of other conditions which have been from time to time reported. These include the *irkintja* of the Australian bushmen, and many now only of historical interest, such as the *sibbens* or *button-scurvy* of Scotland, the *radesyge* of Norway, and the disease which decimated the early settlers around Hudson Bay.

His thesis is that treponematosis in primitive man is of the yaws pattern, manifesting as a spirochaetal disease of childhood, spread by close contact, the common drinking bowl, and by certain insecta, and fostered by poor hygiene, squalor, ignorance and overcrowding. He affirms that, as conditions improved or climatic conditions were altered, and changes of raiment and improved bodily cleanliness reduced the numbers of infectious cutaneous lesions, the spirochaete had, as its only means of survival, to rely more and more upon close contact of infected mucous membranes—a state of affairs which occurs automatically during sexual intercourse and kissing.

Bejel is therefore considered to be a form of syphilis operating in the drier climate of Iraq and Syria, in the same way as yaws but producing the lesions of syphilis.

Not everyone, however, accepts that yaws and syphilis are the same. Hackett (1946), for example, has studied both diseases in Uganda and claims that they have now become defined into two areas in which one or the other predominates. He considers also that the two conditions can, in the early stages, be readily distinguished on clinical grounds. Certainly there are no pathological tests which will help. Others, too, affirm the individuality of *pinta*, which, with its curious pigmentary changes, has a greater right to such claims. However, no clear means of differentiation have been evolved by the pathologist, although McLeod and Turner (1946) found some differences in the trends of the pattern of orchitis following inoculations of the respective treponemata into the testicles of rabbits.

The organisms *T. pallidum* of syphilis, *T. pertenue* of yaws and *T. carateum* of *pinta* are all similar in appearance and behaviour, and the conventional serum tests for syphilis behave in an identical manner in all three diseases. Much was hoped of the new Treponema Immobilization Test of Nelson and Mayer (1949). This test depends on a syphilitic antibody which differs from the reagin which is

responsible for positive reactions to standard tests. However, from the little information at present available, it appears that this test holds out no hope of differentiating yaws from syphilis, or gives added proof of their single identity, according to the views of the reader. Nelson *et al.* (1950) states that the test is positive in infections due to virulent *T. pallidum*, *T. pertenue* and the *T. cuniculi* of rabbits. Hudson (1951), who was engaged in Iraq on a combined *bejel* and syphilis project, aimed at providing knowledge of the treponematoses which should be applicable all over the world, and also in reducing the incidence in Iraq itself, has sent inoculated rabbits to Baltimore to be used in this test. The results will be awaited with interest.

Even without becoming involved in the question of the relationship of yaws and syphilis, which after all is not important to the argument, there are others as Akrawi (1949) and Willcox (1949), who consider that *bejel* and syphilis are the same and that extra-venereal syphilis is therefore a global problem. That syphilization and civilization go hand in hand is a time-worn *cliché*. Looking backwards rather than forwards, however, the incidence of treponematosis again becomes high in the most primitive of peoples. It is as if the unconscious triumphs over the treponematoses at an early stage of Man's development are being surrendered again to the spirochaetes of venereal syphilis as the villages in the bush become towns. The final stage is the triumph over venereal syphilis which is being achieved in the United States and Western Europe to-day.

Fig. 1. Early Njovera: Condylomata.
Fig. 2. Early Njovera: Oral Lesions.
Fig. 3. Late Njovera: Gummatous Lesion.

The Njovera of Southern Rhodesia. While performing a venereal disease survey in Southern Rhodesia (Willcox, 1949), the author discovered another local variety masquerading under the name *njovera*. Although isolated examples of it were noted at widely separated places, it appeared to be the most concentrated in the extreme north-west and south-east of the country, but, with improving conditions, both social and medical, the disease is on the wane, and only islands of it still remain. (Hudson has noted that the mere presence of a school, which indicates a substantial degree of social advancement, means that the *bejel* is no longer prevalent in the area around it.) Hearsay evidence suggests that it also exists in Bechuanaland.

The primary stage of the disease is seldom encountered. It affects the children and is usually seen in the secondary stage with signs of genital and near-genital condylomata (Fig. 1), mucous patches in the mouth and split papules

at the commisures (Fig. 2), and a rash, often of a framboesiform type, which is a scanty eruption of large lesions with a predilection for the axillae and thighs. There is often sore throat and laryngitis. The glands, especially the inguinal, enlarge to a syphilitic pattern (Willcox, 1950a).

The infection is transmitted by close contact, sleeping huddled together in crowded huts and rondavels, by the common drinking bowl, and possibly also by flies. The author first noted the disease when he was presented with a series of patients ranging in age from babies born of mothers known to have syphilis, to adults with acknowledged syphilis—all with identical oral and ano-genital lesions. The young babies were considered to be examples of early congenital syphilis, and the adults of early acquired syphilis. Those of intermediate age (4-10 years), however, were too old to have relapsing congenital lesions and too young for the sexually acquired disease (Willcox, 1951).

The name *njovera* is used by the Karanga peoples of the Ndanga and adjoining regions south and south-east of Fort Victoria merely to imply a treponematosis. The same name is employed both for the childhood form and also for the venereal syphilis of the towns. The Karanga people well appreciate the social implications of the difference and, although the same name is used for both, they often substitute the bastard word *sikki* for the town-acquired complaint.

'Throwback' infection was also seen, and this, if seen often, is a clear pointer to extra-venereal infection. The occurrence of chancres on the nipples of mothers feeding their children with well-marked secondary lesions is most suggestive evidence that the children were affected first and that the disease, therefore, is not congenital syphilis. It was noted in this respect that lesions of the breasts of nursing mothers, even breast abscesses, were on occasion called *njovera* by the Native orderlies, indicating that the existence of 'throwbacks' is well known to the peoples.

Incidence of Njovera. Some 1,620 adults in 14 medical institutions (mainly rural clinics) in the *njovera* area were questioned about the previous history of the disease. It was admitted by 436 persons (26.9%), of which no less than 293 (18.1%) had it as a child and only 143 (8.8%) as an adult. At the clinic where the series of cases was seen (on the Lundi river), the admitted previous treponematosis rate was 50%. It was everywhere noticeable that the older persons generally admitted to having had the disease during childhood, the younger persons less frequently. As might be expected, a previous history of the disease predisposed to a greater likelihood of a positive Kahn test when serological surveys were undertaken on adults. Thus of 156 adults in hospital who admitted to a previous history of the disease, 25.6% gave positive results, while of 617 persons with no such history only 8.7% were positive.

The disease, however, is certainly on the wane. In part of the area in which the cases were observed the medical policy for many years has been to give a public health treatment for syphilis to all patients and their relatives who take residence in the clinics. Although the admitted *njovera* rates in these clinics, with one exception, varied between 28.6% and 44.6%, the sero-positive rates to the Kahn test in the inmates of the same clinics was only 13.2% on 1,527 tests, or 10.2% if known venereal cases were excluded. Similarly, of 728 children questioned, only 6.2% stated that they had so far had it, and the sero-positive rate on 360 children tested in various schools adjacent to the clinics was only 1.9%. On the other hand, in a clinic outside the area where mass treatment was practised, but adjacent geographically, 50% of the inmates admitted to a previous history of the disease, and there was a 40% positive rate to the Kahn test, while 8.7% of the children of a nearby kraal school showed positive tests.

Figures were also obtained from a Swedish Mission situated some miles to the west, where blood specimens were examined for syphilis as a routine on all admissions to the hospital. There had been a decline in sero-positivity in the consolidated laboratory figures from 77.5% in 1929 to 39.4% in 1948, although extremely high rates were still being recorded at their medical outpost in the bush some distance to the south.

Late Lesions. Late lesions observed, often in children, included gummata of the soft palate, bone and soft tissues, and gangosa-like lesions (Fig. 3), which were termed *njovera* by the native Karangas. Whether the cardiovascular or nervous systems are affected is unknown, but in respect of *bejel* it has in the past been thought not. Part of the investigation at present being conducted in Iraq will elucidate this point. Congenital transmission is also thought to be rare in the childhood complaint because time has usually rendered the disease incapable of such transmission when the patient is of child-bearing age.

No conclusive evidence of the existence or absence of an appreciable amount of aortic syphilis was obtained during the survey, although the stethoscope was applied to a considerable number of chests of middle-aged and elderly persons seen in the clinics. An attempt was also made to unearth neurosyphilis by the examination of the cerebrospinal fluids of 55 persons suffering from neurological disease. Of these 42 suffered from epilepsy and 13 others from divers conditions. Of 45 concerning whom information is recorded, 22 admitted to previous *njovera* of which 14 had it as a child and eight as an adult. Two patients had flat noses and one other had lost a considerable part of it. Two of these had lost portions of the soft palate and an additional patient had a stinking ulcer of the hip, possibly gummatous. No positive Kahn or Ide tests were obtained on any of the spinal fluids and the results of the serum tests showed no higher incidence of positivity than those of the pool from which they were drawn. Certainly meningo-vascular syphilis could not be blamed for the epilepsy which was very prevalent in the clinics of this area.

Whether the disease can be transmitted congenitally is not settled: 418 female adults in the *njovera* area admitted to 1,546 previous pregnancies and there were 56 miscarriages of which 27 (48.2%) occurred in the latter half of pregnancy; 410 other women were questioned in the urban districts of Bulawayo. These admitted to 936 pregnancies of which there were 56 miscarriages and no less than 45 (80.4%) were in the latter half of pregnancy. As miscarriages due to syphilis tend to occur late in pregnancy it might be inferred that there were more syphilitic women capable of infecting their unborn children in Bulawayo than in the *njovera* area. On the other hand the seropositive rate in Bulawayo, resulting

from the higher incidence of venereal syphilis in the towns, was greater than that of the *njovera* area which had had the benefit of mass treatment. Also it might be argued that patients in the *njovera* area who miscarried due to malaria early in pregnancy would have done so later on account of syphilis had the foetus been allowed to live that long. The infantile death rate was certainly higher in the rural areas, no less than 352 infants and 74 children dying of the 1,490 live births of the 418 women, but this was thought to be due to malaria and dysentery rather than syphilis.

Signs of late congenital syphilis were mainly gummatous, but their existence is not necessarily evidence of congenital transmission. Hutchinson's teeth are but rarely seen in Southern Rhodesia. The teeth of no less than 4,051 persons were examined, of which 3,491 persons were children and 560 were adults. No less than 2,278 of these were in the *njovera* area. Only one patient, a young boy in a Blind School, had definite Hutchinsonian teeth, although there were two others from an urban area in which it was believed that the dental changes were syphilitic. Fifty-one others had teeth bordering on the screw-driver pattern, but their significance was dubious and no association with syphilis was encountered in the serum tests. Only two had obvious sabre tibiae. These findings are in keeping with those of Blacklock (1931) who similarly only found one case of Hutchinson's teeth in 3,800 Natives examined in Sierra Leone. Interstitial keratitis was also apparently uncommon. Only 8.2% of 62 inmates of a Blind School run by the Dutch Reformed Mission gave positive or weakly positive Kahn tests.

Thus the information that was gathered concerning *njovera* agrees with descriptions of other treponematoses such as *bejel*. Both are diseases with the manifestations of clinical syphilis but with a yaws epidemiology. Apart from the occasional 'throwback' infection, the primary stage is rarely observed and the most usual signs are condylomata and mucous patches in children. In the tertiary stage gummata are the most frequent manifestation of declared disease, although latent infection is common. In both diseases the evidence that the cardiovascular and nervous systems are involved is not at first sight striking, neither is evidence of congenital transmission. Both diseases are amenable to mass treatment methods employing penicillin.

Thus the similarity between *ñjovēra* and *bejel* was at once apparent and it was felt that they were the same. Shortly after completing the survey an opportunity was offered to visit Iraq on behalf of the World Health Organization and the *bejel* was seen. The opinion was confirmed.

Endemic treponematoses can be controlled by penicillin. By employing single injections of 1.2-2.4 mega units of procaine penicillin G with 2% aluminium monostearate, not only can a reasonable hope of cure be extended to the individual early case, but it is also a most powerful public health measure which, if used widely, may rid an area of its infectious cases and thus bring about a marked fall in incidence. I used this method with great success in Southern Rhodesia (Willcox, 1950). The World Health Organization has tried it in India and is at present engaged in a campaign to wipe out yaws from Haiti. By the end of October 1950 no less than 111,557 persons had been screened and 57,598 infectious cases treated (Guthe and Reynolds, 1951). Likewise during 1949 over 292,000 persons were examined in Bosnia-Herzogovina and, by the end of 1950, 60,000 persons had been examined in another WHO treponematosis campaign in Indonesia. The project in Iraq is still in progress.

SUMMARY

1. The world-wide distribution of extra-venereal syphilis in primitive peoples is noted. As civilization advances the incidence lessens to be replaced by perhaps an equal or even greater amount of venereal syphilis as the villages become towns.

2. That a number of nuclei or residua of such infection are present in Africa is more than likely.

3. One such variety, called *njovera* by the Karangas in the south-east of Southern Rhodesia, is described. As a result of public health measures employed over a number of years it is rapidly declining in prevalence. In Sindebele the word *njovela* is used for syphilis and some cases were noted under that label in the south-west. In the north-west the Batongas call it *siakwelele*.

4. The significance of a nipple chancre in the mother of a syphilitic child ('throwback' infection) in the recognition of extra-venereal syphilis is stated. It is recommended that all such cases noted by medical officers in the bush should be reported to district medical officers of health so that the localities of endemic syphilis in Africa may be plotted.

5. That some may consider the condition to be yaws is beside the point. Both conditions, if both there are, react extremely well to a single injection of 2.4 mega units of penicillin retard, and both, if both there be, have the same ultimate complications. Both, therefore, are treponematoses which are well rid of. A smaller dose of 1.2 mega units may be given in regions where the numbers are too large to justify the expense of the larger dose.

6. Africa is a vast continent with many political and few geographical frontiers to disease. Even so, the treponemal diseases can be controlled if tackled on a comprehensive scale.

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EDITORIAL

MEDICAL FEES

The practice of medicine cannot be divorced from the economic conditions obtaining in the society in which it purposes to function. Doctors are not immune to the material influences which affect the standard and the cost of living of other citizens. They are as much and as obviously the victims of economic pressure and the spiral of inflation as is the rest of the community. Nevertheless, because the avocation of medicine is uniquely different from all other undertakings in our society, the profession is always reluctant to increase the charges it is compelled to make for its services. With the passage of years, however, the disproportion between the service and its reward, in terms of contemporary economic values, became so considerable as to threaten to produce a complete dislocation in the economics of the profession. Despite this serious state of affairs, the organized profession nevertheless made a most generous gesture in agreeing to a 10% reduction in the tariff of fees for Medical Aid Societies, as a temporary measure, because the profession realized how hard the average wage earner and the average citizen of modest means was hit by the seemingly never-ending increases in the cost of mere necessities.

It was obvious, however, that the individual doctor could not and should not become the means whereby the provision of curative and other health services was to be subsidized. This would be an unwarranted imposition on the medical profession and a flagrant omission on the part of industry, commerce and the State to recognize the proper contribution they must severally make to keep pace with an unstable situation constantly changing for the worse.

The position undoubtedly reached its climax this year and the profession was forced, although reluctantly, to adopt a realistic approach (much overdue) to the economic problems which now faced it. Medical practitioners in salaried employment had been able to contend with some of their difficulties by means of the automatic, though inadequate, cost-of-living allowances which were grafted on to their salaries. Their colleagues in private practice, however, found no such measure of relief, however small it may have been. As a result of the pressure of economic circumstances entirely beyond the profession's own control, it became necessary to revise and increase the fees payable for the day-to-day services performed by the medical practitioner.

VAN DIE REDAKSIE

DOKTERSGELDE

Die geneeskundige praktyk is onafskeidbaar van die ekonomiese omstandighede wat heers in die maatskappy waarin hy wil optree. Geneeshere is nie gevrywaar teen die materiële invloede wat die lewenstandaard en -koste van ander burgers beïnvloed nie. Hulle is eweneens en netso klaarblyklik die slagoffers van die ekonomiese druk en die inflasiespiraal as die res van die gemeenskap. Nietemin, omdat die beroep geneeskunde op buitengewone wyse anders is as alle ander ondernemings in ons maatskappy, is die beroep huiwerig om die gelde te verhoog wat hy genoodsaak is om vir sy dienste te vra. Met die verloop van jare het die wanverhouding tussen die diens en die beloning daarvoor, volgens hedendaagse ekonomiese waardes, so aansienlik geword dat dit die ekonomie van die beroep met totale ontwrigting bedreig het. Ten spyte van hierdie ernstige toedrag van sake, het die georganiseerde beroep 'n uiters gulhartige gebaar gemaak deur, as 'n tydelike maatreël, toe te stem tot 'n vermindering van 10% in die tarief van die gelde vir Mediese Hulpverenigings. Die beroep het besef hoe swaar die middelmatig besoldigde persoon en die gewone burger met matige inkomste dit kry as gevolg van die skynbaar nimmereindigende vermeerderings in die koste van blote lewensmiddele.

Dit was egter klaarblyklik dat die individuele geneesheer nie die middel kon wees waardeur die verskaffing van genesende en ander gesondheidsdienste gesubsidieer moes word nie. Hierdeur sou 'n ongewettigde voordeel uit die mediese beroep getrek en ook 'n verregaande versuim deur die nywerheid, die handel en die Staat begaan word, om die behoorlike bydrae te erken wat hulle afsonderlik moet lewer ten einde tred te hou met die onbestendige toestand wat gedurig agteruitgang toon.

Die toedrag van sake het ongetwyfeld hierdie jaar sy hoogtepunt bereik en die beroep is met teësin gedwing om 'n realistiese houding in te neem (wat lank al moes gebeur het) teenoor die ekonomiese probleme waarvoor hulle te staan kom. Besoldigde geneeshere was in staat om sommige van hulle moeilikhede die hoof te bied, dank sy die outomatiese hoewel ontoereikende lewenskostetoelaes wat by hulle salarisse gevoeg is. Hul privaat-praktiserende kollegas het egter geen sodanige verligting, hoe klein ook al, ondervind nie. As gevolg van die druk van ekonomiese omstandighede heeltemal buite die beroep se eie kontrole om, het dit nodig geword om die betaalbare gelde vir daaglikse dienste deur geneeshere gelewer te hersien en te verhoog.

POTT'S DISEASE*

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The purpose of this paper is to review the modern attitude towards Pott's disease. Use is made of certain clinical findings in a series of 66 unselected cases treated at Wrightington Open Air Hospital in Lancashire (referred to in the text as the Wrightington series). No comparisons will be made between methods and results of treatment in Britain and South Africa as no specific antibiotics were freely available in Britain at the time of this survey in 1947; in the cases in South Africa, while Streptomycin has been available, it has not been used over a large enough series of cases and for a long enough period for any useful deductions to be drawn.

AETIOLOGY

The disease is due to infection by *M. tuberculosis*. Both the human and the bovine strains of the bacillus have been declared responsible for skeletal tuberculosis, varying proportions of the two strains being incriminated in different parts of the world at different times. Illingworth and Dick (1945) quote the following figures relating to bovine infection in a pre-war series.

	At All Ages	*Under 5 Years*
England	18%	27%
Scotland	42%	80%
Germany	5%	—

Mann (1946), investigating 500 cases of skeletal tuberculosis, found the incidence of the human strain to be 94% in 88 patients from whom pathological material was obtained. His cases were drawn from the London area and he considers that milk infected with the bovine strain can no longer be considered an important source of skeletal tuberculosis, presumably because of its pasteurization. In the Wrightington series only one instance of infection with a bovine strain was found in 47 cases where pathological material was available for examination. No figures relative to strain identification are available in South Africa, but it is presumed that a high proportion of extra-pulmonary lesions may be due to the bovine tubercle bacillus.

INCIDENCE

Surgical tuberculosis is far more common in children than in adults and Pott's disease is by far the commonest type of bone and joint infection encountered, being responsible for 45% of the total number of cases of skeletal tuberculosis admitted to Wrightington Hospital over a period of one year. Mann (1946) found the incidence of Pott's disease in 500 cases of skeletal tuberculosis to be 41.2%; Mercer (1950) gives a figure of 30%, while Cleveland (1939) found 52%.

Age. The maximum age incidence in the Wrightington series was in the 2 to 7-year group.

Sex. The sex incidence is about the same in the overall picture but during childhood boys seem to be affected slightly more often than girls. In the Wrightington series 33 cases occurred in each sex, but under the age of 15 years, 22 males and 19 females were affected.

Family Contact. The importance of tuberculous family contact cannot be over-emphasized. In the Wrightington series 13 cases had definite family histories of infection, an incidence of 20%.

THE PATHOLOGICAL PROCESS

The commonest site of skeletal disease is in the thoraco-lumbar region, and next in the lumbar spine. Over 50% of all cases have the disease between T9 and L2 vertebrae. In the Wrightington series the incidence followed this pattern. Fig. 1 depicts the number of times each vertebra

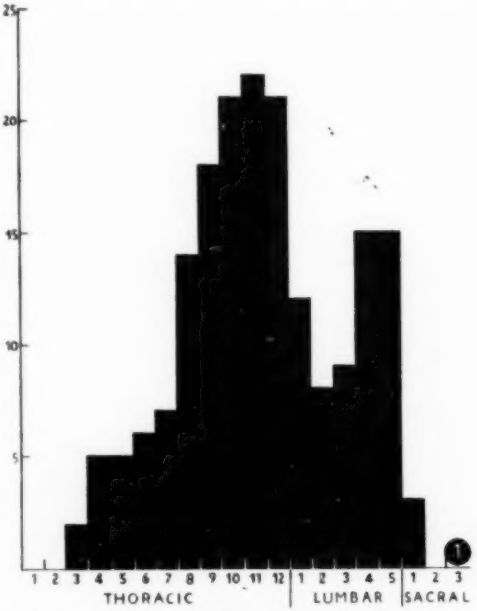

Fig. 1. Frequency of vertebral involvement in 66 cases of Pott's disease at all ages (Wrightington series).

was affected in the series. Analysis into adult and childhood groups (the age of 15 years being arbitrarily selected as the dividing line) reveals the incidence of localization to be essentially the same.

It is generally accepted that whether the portal of entry

* The References will be published at the end of the concluding part of this paper.

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of the bacillus be pulmonary or via the alimentary system, the spread to extra-pulmonary foci is haematogenous, as indicated by Collins (1949). Frazer (1929) has suggested that localization in the spine may be due to retrograde lymphatic spread from the cisterna chyli and the thoracic duct to the vertebral bodies against which these structures lie. He draws a parallel between this localization and the vertebral invasion of malignant disease by the same process.

Burke (1950) concludes that most cases of Pott's disease are the result of lymph-borne dissemination. He considers that the pulmonary focus spreads to cause a pleuritis from which bacilli are carried to the para-aortic glands; these or communicating glands undergo caseation or necrosis and the tuberculous process spreads to the adjacent vertebrae, either by contiguity or via the lymphatics, causing Pott's disease. The most important primary focus of the disease is undoubtedly in the lungs, and the assessment of its importance in spinal tuberculosis cannot be divorced from the general relationship between pulmonary and skeletal disease.

The results of the investigations of various authors have been abstracted in Table I. In 556 cases of extra-pulmonary infection there was 59.7% pulmonary involvement. This compares closely with Mann's 57% involvement in 500 cases. In the Wrightington series only 20% showed concurrent pulmonary disease, but this is really a selected group in which pulmonary disease became apparent during treatment in an orthopaedic institution. It may be accepted that in about half the cases the development of this disease may be along the lines suggested by Frazer and Burke, while in the remainder only the concept of blood-borne infection can be entertained.

TABLE I

Investigator	*Number of Cases Extra-Pulmonary*	*Number of Cases Pulmonary*	*Percentage*
		Adults	
Snyder (1933)	51	22	37·8
Meng and Chen (1935) ..	100	47	47·0
Rosencrantz *et al.* (1941) ..	160	118	73·7
Tepper and Jacobson (1943)	100	79	79·0
Total Adults	411	266	64·7
		Children	
Ragolsky (1929)	104	48	46·0
Snyder (1933)	41	18	47·4
Total Children	145	66	45·5
Total Cases	556	332	59·7

Seddon (1935*a*) has described four types of tuberculosis of the spine.

1. *True Tuberculous Arthritis.* This is the same as arthritis in any other joint. The joints of the appendages are affected and the appendages themselves may be attacked. This form is very rare and occurs usually in the atlanto-axial and atlanto-occipital joints. Elsewhere it is always secondary to tuberculosis of some other part of the vertebra.

2. *Tuberculous Metaphysitis.* This is the usual juxta-epiphyseal type of tuberculosis as found in a long bone and is the commonest variety of childhood.

At first two, and later, possibly more adjacent bodies are affected. By haematogenous spread the infection is carried to adjacent metaphyseal regions of the vertebrae by the principal nutrient artery (the main blood supply in children, and often persisting into adult life). The infective process interferes with the nutrition of the inter-vertebral disc leading to atrophy. The disc may be partially or totally destroyed in company with the adjacent bone.

Compere and Garrison (1936) consider that the disc is more resistant to destruction by a tuberculous process than by a pyogenic infection, but in the writer's experience the opposite is the case.

3. *Diffuse Tuberculous Osteomyelitis of the Body.* This is known as the central type and may give a radiological picture of density of the involved bone. If not arrested, the disease may cause wide-spread destruction of the bony substance as a result of infiltrating granulation tissue; the body will then collapse either slowly or suddenly. In sudden collapse, especially in the mid-thoracic region where the cord fits more or less snugly in a narrow canal, the pressure of extruded material may cause paraplegia. Less complete bony involvement may cause cavitation and sequestrum formation. This type of bony involvement is rare and Seddon (1938) was not satisfied that he had seen it in adults.

4. *The Periosteal Lesion.* This occurs on the anterior, or very rarely on the posterior aspect of the bodies and is the common lesion of the adult. This may be explained by the theories of Frazer and Burke. Table I shows a higher incidence of pulmonary tuberculosis in adults, which may in some way account for it. Alternatively, the vascular pattern of the adult vertebra is such that it receives its blood supply through the anterior longitudinal ligament. In this lesion several bodies are involved and the intervening discs are atrophied later by toxic products and interference with the blood supply.

Besides the destruction of bone directly due to the disease process, or pathological ulceration, there occurs in the thoracic spine a certain amount of mechanical ulceration of the softened bone due to respiratory movements.

The aneurism sign is a secondary lesion observed radiologically and pathologically. It consists of a crescentic erosion of the fronts of the bodies above and below the actual disease process, but with no obvious narrowing of the disc spaces. It is due to transmitted aortic pulsations through an abscess lying under the anterior ligament. It is not found above the fourth thoracic or below the second lumbar vertebrae.

As the bone is replaced by granulation tissue, collapse of the diseased bodies may take place, the degree and extent of deformity being dependent on the number of vertebrae and the region of the spine involved.

1. *Cervical Spine.* Here, there is rarely, if ever, complete collapse and angulation because of the small size of the bodies relative to their appendages, which are placed well forwards. With destruction of bodies the remainder settle down until

they are supported by the transverse processes, the final result being a short neck with limited mobility.

2. *Upper and Mid-Thoracic Spine.* The appendages are set well back and with destruction of bodies the section of spine above the disease swings downwards and forwards around the horizontal axis of the apophyseal joints. This gives the classical 'hunch-back' picture. It is in this region that the cord is so often involved.

3. *Lower Thoracic Region.* The mechanism of deformity here is essentially the same as that for the rest of the thoracic spine, but as there may be complete destruction of two or more bodies, the anterior surface of the upper surviving body may rest in contact with the upper surface of the lower surviving body, giving a right-angled deformity of the spine, often surprisingly disguised by the development of compensatory curves in lordosis above and below.

4. *Lumbar Spine.* Here the bodies are large and the appendages small and not relatively far back and, with the normal lumbar lordosis taken into account, the collapse leads to an even settling down with good bony contact and little deformity beyond some flattening of the normal lumbar curve.

Healing of the spinal focus is usually by fibrous tissue which may be stable or unstable. In a proportion of cases in the upper spine, healing may be by bony union after a number of years; whereas in the lumbar spine this is a common ending to the disease.

THE CLINICAL PICTURE

In both adults and children Pott's disease invades the body by stealth, but the onset is probably more insidious in the adult, with the result that it has usually progressed further by the time the case comes to treatment. This is probably a factor in the worse prognosis attached to adult cases, although McKee (1936) claimed better results in adults than children.

In children the disease is diagnosed fairly early nowadays, but, even so, appreciable bony destruction may have taken place with minimal systemic disturbance. A history is obtained of being 'off-colour' for two or three months, followed by deformity or pain. Tenderness over the spine, limping, muscle spasm or the appearance of an abscess may be the first warning to the parent of the presence of disease.

An analysis of presenting symptoms in 40 childhood cases in the Wrightington series showed deformity to be the commonest symptom causing the parents to seek advice; pain, limping and the presence of an abscess, were next in order. An analysis of the frequency of symptoms is shown in Fig. 2.

Fig. 2. Analysis of presenting symptoms in 40 cases of childhood Pott's disease (Wrightington series).

The clinical records of this series indicate that the presumed duration of disease before the institution of treatment averaged three months, the shortest being one month and the longest eight months. In eight children a history of trauma was obtained which the parents associated directly with the spinal lesion. Eight children had histories of tuberculous family contacts.

Examination shows all degrees from a healthy to an obviously ill child, but there is usually some record of malaise and poor appetite even in the best-looking cases.

The gait is careful, as though there is fear of jarring the spine. Muscular spasm is present with limitation of spinal movements. Passive extension, tested by lifting the prone child by the ankles, shows limited mobility. Pain and tenderness may be elicited, but should not be specially sought for, and especially is percussion to be avoided. Deformity can usually be felt, if not seen. Examination should always include palpation of the usual sites where abscesses present. The state of muscle tone, the tendon reflexes and the presence or absence of ankle clonus will indicate whether there is any interference with the conductivity of the spinal cord.

Radiological examination of the spine and lung fields, erythrocyte sedimentation rate and a dermal patch test complete the diagnostic examination.

In the adult the onset may be so insidious as to have progressed to a serious degree of bony destruction before advice is sought, and the results are likely to be correspondingly more serious. The exception to this is in the number of adult cases seen with a healed lumbar lesion, the patient never having been aware of Pott's disease, but giving a history of low back pain in the past for one or two years.

In 26 adult cases in the Wrightington series, deformity, pain and the presence of an abscess were the commonest presenting symptoms. An analysis of the frequency of symptoms is shown in Fig. 3.

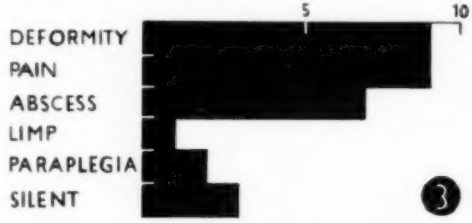

Fig. 3. Analysis of presenting symptoms in 26 cases of adult Pott's disease (Wrightington series).

Clinical examination may reveal all gradations of symptoms and signs from a mildly painful back to incapacity with definite signs of spinal disease. This is an indication of the suspicion with which backache should be viewed and shows the necessity for adequate radiographs in each case.

In adults, as in children, periodic views of the lung fields should be taken during the course of the disease, whether or not pulmonary pathology was present at the inception of treatment. Table I shows the importance of this safeguard.

Fig. 3 indicates that in 11.5% of the cases the spinal disease was silent, being discovered on routine examination during treatment for pulmonary infection.

THE RADIOLOGICAL PICTURE

The clinical diagnosis of Pott's disease in a child may at first be unsupported by radiological evidence, but the more usual finding in the early case is narrowing of one intervertebral space. Later, erosion of adjacent bodies is seen, often commencing at the anterior angle, going on to complete destruction which may be the situation at the

time of the first picture. The condition may progress to loss of several vertebrae with the eventual attachment of their appendages to a composite vertebra formed from the remaining fragments, the whole forming the apex of the kyphos.

The changes are essentially the same in the adult case, but special note should be taken of disease of the lumbar spine, where bony destruction may be minimal leading to bony fusion with little or no deformity.

The shadow of a paravertebral abscess should always be looked for and in serial pictures taken at three-monthly intervals the size and definition of the shadow and the presence of calcareous opacities should be noted as a guide to progress. The three phases of the disease can be seen in a series of pictures of its whole course.

First Phase. Decalcification of vertebrae with progressive bony destruction and collapse and a woolly, ill-defined area of activity.

Second Phase. Cessation of bony destruction, but persistence of the ill-defined area.

Third Phase. Recalcification of the diseased area with sharp definition of the bone and possibly resorption of the abscess shadow or the presence of calcified debris.

The various pathological types of lesion can be picked out. The central type may show as a single sclerosed vertebra. The periosteal type shows ragged erosion of the anterior aspects of the bodies with narrowing of the disc spaces. The aneurism sign shows crescentic defects of the fronts of the bodies but without disc involvement at this level.

Where the upper thoracic or lower cervical regions are affected, it may be difficult to judge the extent of the disease and in such situations Snell (1948) and Wood (1948) have demonstrated the value of tomography of the spine. In pulmonary disease the lung markings may on occasion overlie the bone and lead to uncertainty in diagnosis. Here, too, tomography will be of value. In paraplegia, tomograms will show the condition of the spinal canal.

Although the radiological appearance of Pott's disease is characteristic, certain conditions must be borne in mind to avoid errors in diagnosis.

Calve's disease which occurs during childhood, is rare. It shows as a condensation and narrowing of one vertebral body, the discs above and below being unaffected.

Scheuermann's disease (adolescent vertebral epiphysitis) occurs in the dorsal spine and shows as a fragmentation of the anterior part of the epiphyseal rings of the affected vertebrae. This condition may be associated with Schmor's nodes which may, however, also exist alone. The curve is gentle and does not show the localized deformity of caries. Wedging of vertebral bodies due to developmental anomalies are seen in the antero-posterior and not in the lateral views of the spine and the discs are not affected.

Paget's disease and secondary carcinoma may cause difficulty but here again the change is limited to the bone, the disc not being affected.

Kummel's disease (traumatic collapse) can usually be differentiated by the history of injury, but this is not infallible and may lead to difficulties. Narrowing of a disc space due to prolapse of a disc or nucleus pulposus should be differentiated by the accompanying clinical picture, although this condition and lumbo-sacral arthritis remain as traps for the unwary.

A rickety kyphosis may cause trouble in diagnosis, but rickets sufficient to cause such a degree of deformity will manifest signs in other bones too.

Osteo-arthritis of the spine is really a spondylosis with marginal osteophytes and should present no difficulties in diagnosis.

Pyogenic spondylitis affects the bones and less often the discs. The patient is critically ill and the late picture shows lateral 'parrot-beaking' or complete lateral bridging of the disc spaces with bony union of adjacent bodies.

(To be continued)

BERYLLIUM GRANULOMA OF THE SKIN

J. I. LIPSCHITZ, B.A., M.R.C.P., EDIN., D.P.H.
Cape Town

With the increasing employment of fluorescent lighting both in industry and also in the home, the dangers associated with cutaneous contamination by beryllium are becoming more widely recognized, and cases of beryllium granuloma of the skin are constantly being reported. Apart from pulmonary berylliosis following on the inhalation of fumes of beryllium salts, which are capable of inducing the formation of fibrous tissue and granulomas in the lungs, the introduction of beryllium compounds into the skin through injury may set up a similar reaction. Fluorescent lamp tubes are lined with a powder composed of zinc manganese beryllium silicate containing 0.5-2.0% beryllium. Accidental introduction of this powder into lacerations of the skin usually leads to healing which is unduly prolonged and which is characterized after some months by the production of excessive fibrous tissue resulting in an appearance simulating keloids or sarcoids, but with a tendency to ulceration and the discharge of necrotic material. The experimental introduction into the skin of powders without the beryllium content failed to produce similar granulomas. Histologically the beryllium granuloma bears a resemblance to caseous tuberculosis or sarcoid.

The following case was recently seen. Mr. H. E. aged 41 years, employed at a local firm manufacturing fluorescent tubes, has been handling these tubes since 1931. On 23 August 1950, while removing a fluorescent tube, he accidentally broke the tube and sustained three cuts on the dorsum of the left hand and one on the palm of the right hand. All the injuries were lacerated and bled freely. At hospital the largest wound was sutured with three stitches. All the wounds were cleansed and simple dressings applied. Healing took place, but appeared to be unduly slow, so much so that the doctor in attendance commented on it. It was almost a month before dressings could be discarded, but even then the wounds, though closed, as the patient said, 'looked wrong'. They remained swollen, very red and tender and were associated with pain on movement. From time to time they broke down and exuded a little thin, darkish fluid, which dried to form brown crusts.

He was then referred to me for the first time on 30

October 1950. All the wounds were then healed, but at the sites of injury there had developed lesions which resembled keloids or sarcoids. On the dorsum of the left hand there was a thickened, red, irregularly round, flat nodule the size of a sixpence, of rubbery consistence, and alongside it a linear area about ¾ inch long and ¼ inch wide, of similar appearance and consistency. Medial to this was a third and still larger lesion 2 inches long and ¼ inch wide presenting similar clinical features. All three lesions were separated by a narrow zone of normal skin. On the palm of the right hand, at its proximal end, there was a solitary lesion the size of a three-penny bit, flat, irregularly round, raised, red and also of rubbery consistence.

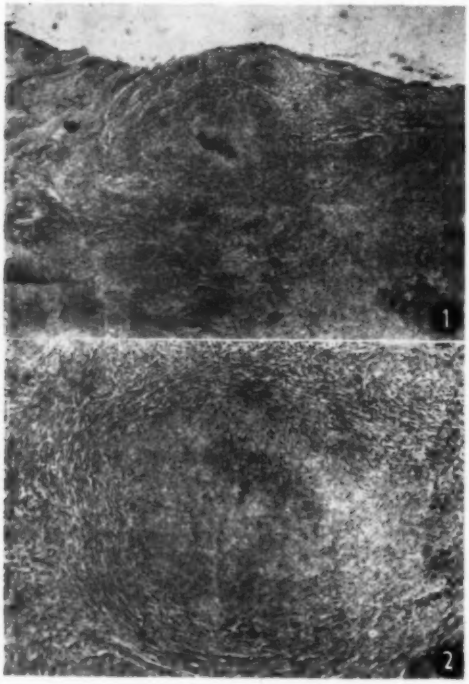

Fig. 1. Beryllium Granuloma. Low power view of the lesion showing granulomatous reaction with necrosis. Haematoxylin and eosin (X50).
Fig. 2. Beryllium Granuloma. High power view of the lesion showing the necrotic area in detail.
Note the general resemblance to a tuberculous granuloma. Haematoxylin and eosin (X150).

A diagnosis of beryllium granuloma was made, and all the lesions were excised on 30 January 1951 by Mr. D. S. Davies, who reported as follows:

'The removal of the granulomata immediately over the proximal knuckle of the ring finger and that over the back of the proximal phalanx of the index finger left two areas, each one inch by three-quarters. These were covered by full-thickness Wolfe grafts as giving better covering than any form of Thiersch graft.'

Healing was satisfactory.

Histology of excised tissue (Dr. Clegg): The specimens consisted of small pieces of tissue taken at biopsy from the skin in an area having been in contact with beryllium.

Microscopically: The skin, in the dermis, is the site of an intense granulomatous reaction. The lesion consists essentially of multiple areas of necrosis in which all organized structure has been destroyed, except for the few surviving inflammatory cells. They are reminiscent of caseous areas in tuberculosis. The centres of some areas which have not proceeded yet to necrosis appear to be occupied by spindle cells resembling endotheloid cells. The necrotic areas are surrounded by an area of fibroblastic reaction with a heavy complement of lymphocytes and, in a few areas, giant cells. Outside this, again, is a layer of dense connective tissue.

The lesions occupy the dermis and upper dermis and in one of the sections appear to have ulcerated through the epidermis.

The picture is consistent with the reaction described as being due to beryllium. No evidence of neoplastic changes could be seen in these sections. No acid- and alcohol-fast bacilli were detected.

CONCLUSION

The history of an injury and the introduction of a beryllium compound into the wound followed by a protracted healing and excessive scar tissue formation renders possible a clinical diagnosis of a beryllium granuloma.

Histologically the lesion resembles caseous tuberculosis or sarcoid, but beryllium can be demonstrated spectrographically, tubercle bacilli are absent and the inflammatory reaction is marked with the necrosis limited to one large area. The presence of caseous areas excludes sarcoid.

The treatment of the condition is complete excision.

TYPHOID SUBPHRENIC ABSCESS

TREATED WITH ASPIRATION AND CHLOROMYCETIN

L. KROGH, M.B., CH.B.
Grey's Hospital, Pietermaritzburg

The patient was a Bantu male aged 24, who had been occupied as a labourer in a bakery. The only previous illness he could remember was a bout of diarrhoea one year previously, which had lasted approximately 14 days.

About 1½ months prior to admission the patient had developed a dry cough which was accompanied by a needle-like pain in the lower left side of his chest. The pain kept him awake at night. He was also losing weight and became short of breath.

He was admitted to Grey's Hospital with the diagnosis of empyaema.

The patient was in a poor state of general health. Six

feet one inch tall, he weighed only 126 lb. Mentally he was somewhat depressed.

There was some fullness over the lower left aspect of the chest (Fig. 1). The respiratory rate was 36 per minute. The expansion with breathing was marked on the right side, diminished in the upper part of the left side and nearly absent in the lower. An area bounded by the midline, the subcostal margin, and the level of the 6th rib in the midclavicular line was stony dull on percussion. There was tenderness over this area and the skin was hot.

The pulse was fast and the apex beat was in the 4th space, three inches from the midline.

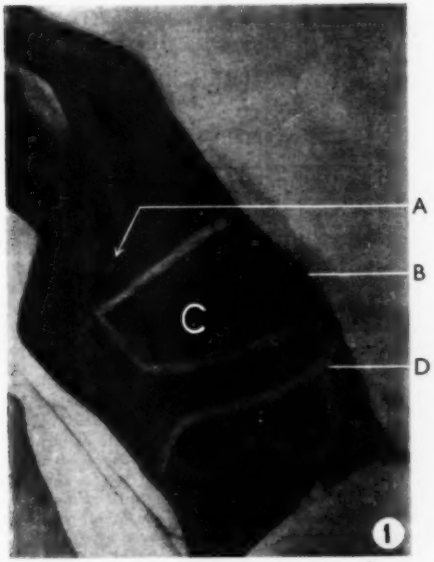

Fig. 1. This photograph shows the wasting of the patient and (A) the apex beat, (B) the bulging of the chest wall, (C) the area of dullness and (D) the lower edge of the displaced liver and spleen.

There was some guarding in the left hypochondrium but no real rigidity. Extending from the left mid-axillary line to the right hypochondrium, a tender mass was protruding three fingers below the costal margin. This was taken to be the spleen and the left lobe of the liver.

The blood count was as follows: red blood cells, 3,100,000 per c.mm.; white blood cells, 8,000 per c.mm., of which 53% were polymorphs, 40% lymphocytes, and 7% monocytes. The haemoglobin was 8.05 gm. per 100 ml. of blood.

It was felt that on the clinical findings the chief differential diagnosis was:

1. A large amoebic abscess of the left lobe of the liver.
2. Encysted empyaema.
3. A left subphrenic abscess.

X-ray examination ruled out an empyaema and showed fixation of the diaphragm (on screening), some basal

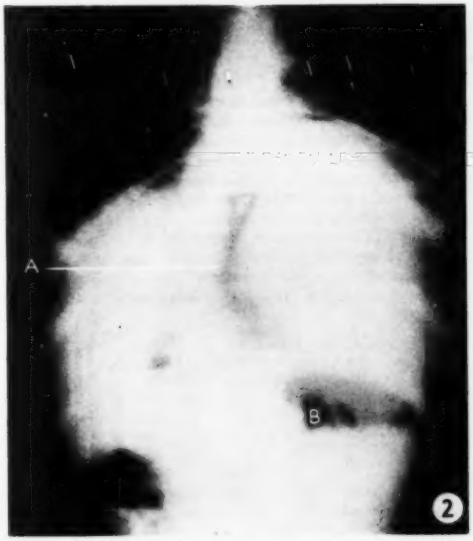

Fig. 2. In this plate air in the stomach (A) and in the colon (B) demonstrates the size of the subphrenic abscess.

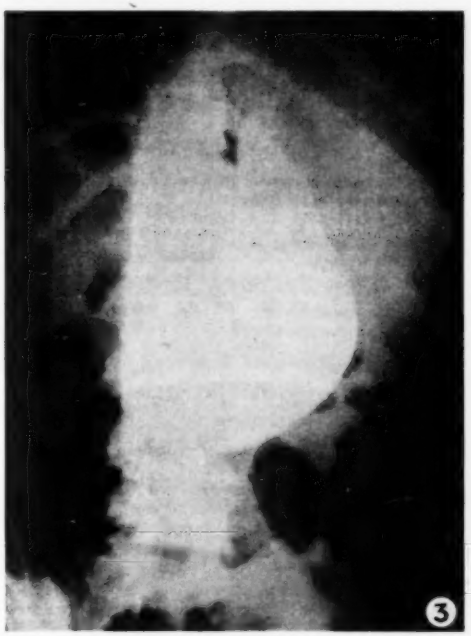

Fig. 3. An opaque meal illustrates some pushing over of the stomach.

reaction, and an inflammatory mass in the left subphrenic area, displacing an enlarged spleen (Figs. 2 and 3).

An aspiration needle was inserted at the point of maximum tenderness. At the depth of approximately 2 cm. pus was struck. This was extremely malodorous and was faeculant on naked-eye inspection. After 8 oz. of pus had been withdrawn the patient became distressed, and the aspiration was discontinued.

One day later a preliminary report from the laboratory stated that a coliform bacillus had been found in the pus. Streptomycin gm. ½ twice daily was consequently administered and when aspiration was next done ½ gm. was instilled locally. On this occasion distress again supervened after 26 oz. of pus had been withdrawn. The first 6 oz. was again faeculant but the remainder was yellow in colour.

The final report from the laboratory now became available.

Direct Examination: Puss cells .. ..
Structureless material .. .. ..
Gram negative bacilli .. .. ..

Culture: There was a profuse pure growth of *S. typhi*.

Chloromycetin	moderately sensitive
Aureomycin	slightly sensitive
Streptomycin	very slightly sensitive.
Penicillin	resistant.

In the meantime the patient was already much better subjectively, probably due to the removal of most of the pus.

Streptomycin was discontinued and chloromycetin was administered in the following way:

Interval	*Number*	*Duration*	*Total*
2-hourly	9 x 0·5 grm.	18 hours	4·50 grm.
3-hourly	9 x 0·5 grm.	36 hours	4·50 grm.
6-hourly	26 x 0·5 grm.	156 hours	13·00 grm.
8-hourly	5 x 0·5 grm.	40 hours	2·50 grm.
8-hourly	3 x 0·25 grm.	40 hours	2·50 grm.
8-hourly	3 x ·25 grm.	24 hours	0·75 grm.
			25·25 grm.

At this stage the serological reactions of the patient were found to be as follows:

AGGLUTINATION (WIDAL) REACTION

Organisms	*Serum Dilutions*							
	1/25	1/50	1/100	1/200	1/400	1/800	1/1600	1/3200
S. typhi O ..	—	—	—	—	—	—	—	—
S. typhi H ..	—	—	—	—	—	—	—	—
S. typhi strain isolated from patient ..	—	—	—	—	—	—	+	—
S. paratyphi A ..	—	—	—	—	—	—	—	—
S. paratyphi B ..	—	—	—	—	—	—	—	—

Aspiration was again performed but pus was only found 4 cm. from the skin surface. After eight oz. had been withdrawn the abscess cavity was apparently empty.

The response was dramatic. The temperature (Fig. 4) dropped and remained normal, except for one rise. The respiratory rate was 24 per minute the next morning and the patient developed a remarkable appetite.

The poor general state was treated in the routine way with a full diet and supplements including a blood transfusion.

Three weeks after admission the patient again developed a pain at the old site and a temperature of 98.8° F the next morning. X-ray examination revealed a recrudescence of the basal reaction. This, however, cleared up spontaneously.

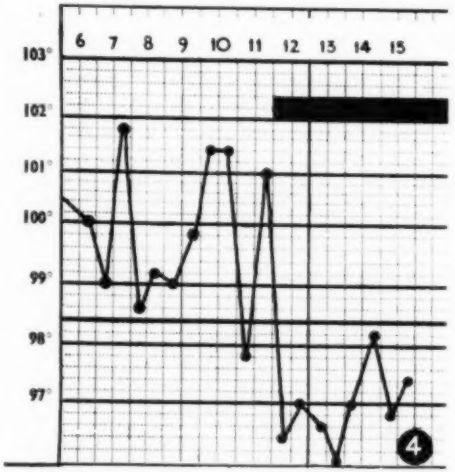

Fig. 4. The favourable response is shown on the temperature chart. The black rectangle represents the period of Chloromycetin therapy.

Five weeks after admission the patient weighed 140 lb., felt well and on X-ray examination showed only slight pleural thickening at the left base. The tumour, which had protruded subcostally, had disappeared after the aspiration and now tenderness could not be elicited even on deep subcostal palpation. The usual urine and stool examinations for typhoid were found to be negative. At this stage his blood picture was:

Red blood cells, 4,200,000 per c.mm.; haemoglobin, 12.5 gm. per 100 ml. of blood; white blood cells, 12,600 per c.mm., of which 49% were polymorphs, 38% lymphocytes, 12% monocytes and 1% eosinophils.

As the patient was anxious to go home he was discharged.

DISCUSSION

The diagnosis was made of left typhoid subphrenic abscess probably secondary to a splenic abscess. It is interesting to trace the possible ways in which it could have arisen.

1. *Continuity.* The abscess may have developed secondary to a rupture of the bowel and peritonitis.

2. *Contiguity.* The chief mode in this case would be from a typhoid splenic abscess, typhoid perisplenitis, or rupture of a typhoid-infected spleen. The latter conditions are all rare complications of typhoid fever. Here as with a blood or lymph borne origin a pure growth of *S. typhi* would be obtained.

The abscess could also have had its origin in typhoid osteitis of a rib or the spine, typhoid myositis of the

anterior abdominal wall, or could have arisen from the left kidney.

A very unlikely cause would be extension down from the lung. It is unlikely that a retroperitoneal cellular spread would be possible.

3. *Blood spread.* This could happen either as a metastatic spread via the portal system or as a result of the presence of bacilli in the arterial system.

4. *Lymph spread.* Bacilli could reach the subphrenic plexuses by the intra- or extraperitoneal routes.

From a diagnostic point of view, there is real difficulty in differentiating clinically between a left subphrenic abscess and a splenic abscess. The primary splenic abscess described by Wallace and Gelfand [3, 4, 7] produces much the same symptoms. Subphrenic abscess may complicate splenic abscess and vice versa (Wolfson [8]).

If Flynn's cases, the origin of which were not all specified, were left out of the series of subphrenic abscesses analysed by Ochsner and Graves,[2] 2.3% of these arose from the spleen.

Barnard, Whipple and Beye (quoted by Ochsner and Graves) found *B. coli* in 25% of subphrenic abscesses, streptococci in 30.2%, and staphylococci in 16%. Of those cases yielding a positive culture in their own series, Ochsner and Graves found 40% due to *B. coli*, 40% due to streptococci, and 20% due to staphylococci. I could find no reference to *S. typhi* as a cause, although typhoid splenic abscess was discussed.

The treatment of subphrenic abscess consists of evacuation of the pus and the institution of chemotherapy. It is accepted that the extra-peritoneal approach provides the best drainage.

Aspiration is generally condemned. It is, however, used at Grey's Hospital as a routine treatment for amoebic subphrenic abscesses which are not uncommonly encountered here. The results have been wholly satisfactory. The fact that it is a dangerous procedure in that it may spread the infective process to the pleural or peritoneal cavities, or injure important structures, cannot be denied.

Some writers accept aspiration as a diagnostic procedure. Preferably it should be done immediately before operation and the needle should be left in place until the pus has been drained. Aspiration is especially indicated in very toxic patients, in whom an unsuccessful operation would weigh the scales heavily.

To this should be added the cases of subphrenic abscess with a large collection of pus, where sudden drainage would cause shock. It is said that a subphrenic abscess can only displace the heart upwards. In the case here reported, the heart was displaced upwards. On two occasions aspiration on this patient had to be discontinued due to shock developing. Shea and Holden [6] analysed the causes of six deaths that occurred in a series of twenty subphrenic abscesses treated by extra-peritoneal drainage. They considered that one death was due to shock. Gelfand [4] has shown that the heart may be displaced to the right by a primary splenic abscess. The mechanical effect of the left subphrenic and a splenic abscess is identical.

I therefore consider initial aspiration of value in these cases as a measure of lessening the chances of shock developing. Extra-peritoneal and extrapleural aspiration may sometimes be possible in these cases by inserting the needle subcostally and pushing it upwards and medially.

The mechanical removal of the pus and the influence of chemotherapy (essentially chloromycetin) produced so dramatic a response in this case that drainage was not necessary.

SUMMARY

1. A case of left typhoid subphrenic abscess is presented.
2. The possible pathogenises is discussed.
3. The treatment of subphrenic abscesses is discussed with special mention of the site of aspiration.

I wish to thank Prof. F. Forman for reading and criticizing the paper, Drs. Sacks and Borrowdale for their help with the X-ray interpretations, and Dr. S. Disler for permission to publish the case.

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VERENIGINGSNUUS : ASSOCIATION NEWS

THE MEDICAL ASSOCIATION OF SOUTH AFRICA

ANNUAL REPORT OF THE PRESIDENT OF FEDERAL COUNCIL FOR THE YEAR ENDED 30 JUNE 1951

Obituary: It is with deep regret that we have to record the loss through death of the following members:—

Dr. A. G. Albers, Dr. C. J. Albertyn, Dr. G. A. Beyers, Dr. J. M. Beyers (Somerset East), Dr. A. Carlos, Dr. G. Dietrich, Dr. T. Eggers, Dr. E. L. Ferguson, Dr. J. S. B. Forbes, Dr. K. Frater, Dr. R. W. Fyvie, Dr. D. Horwich, Dr. R. Kammer, Dr. F. Levy, Dr. Eric Lewin, Dr. J. A. Mulvany, Dr. M. Oshry, Dr. H. Pillemer, Dr. C. Resnekov, Dr. I. Rivlin, Dr. G. W. Robertson, Dr. C. C. Rowland, Dr. S. F. Silberbauer, Dr. W. P. R. Swemmer, Dr. D. F. Theron, Dr. W. Thomas and Dr. E. E. Wood.

Membership: During the past year there has been an overall increase in membership of 280, the total membership now being 4,097. This includes some 165 unattached members, where last year they numbered only 23. There have still been losses due to removal, but these are not as great as in previous years owing to the fact that the Federal Council has agreed that members proceeding overseas for study and other purposes might become unattached members should they be away for more than twelve months. There is still a certain amount of apathy to be found amongst some members who allow their membership to lapse when they move from one area to another. It would be as well for every member to realize the importance of his own membership and his responsibility as a member in seeing that all his colleagues join the Association. A strong Association in numbers as well as force is the profession's only safeguard against exploitation.

The members are distributed among the various Branches as follows:

Border Branch 135, Cape Eastern Branch 59, Cape Midlands Branch 159, Cape Western Branch 935, East Rand Branch

174, Griqualand West Branch 61, Natal Coastal Branch 398, Natal Inland Branch 143, Northern Transvaal Branch 377, Orange Free State and Basutoland Branch 265, Orange River Branch 37, Southern Transvaal Branch 1,068, South West Africa Branch 45, Transkei Branch 76, Unattached Members 165. There are, in addition, 302 Student Members.

Honours: During the year the Council honoured Dr. J. S. du Toit of Cape Town, who has been the Association's Honorary Treasurer for over twenty years, by the award of the Association's Gold Medal. Dr. J. C. Gie of Cape Town was honoured by the award of the Association's Bronze Medal in recognition of his work for the Cape Western Branch and his service to the Association, particularly in connexion with Contract Practice. The Hamilton-Maynard Memorial Medal for the most outstanding paper published in the *South African Medical Journal* during 1949 was awarded to Dr. I. Schrire of Cape Town for his paper entitled *The Diagnosis of Hyperthyreoidism*, while that for 1950 was awarded to Mr. Rowland A. Krynauw of Johannesburg for his paper entitled *Infantile Hemiplegia Treated by Removal of One Cerebral Hemisphere*. The presentation of these medals has not yet been made, but this will be done as soon as a suitable occasion occurs.

A new honour has been agreed to by the Council, to be known as the Leipoldt Memorial Medal. This is to be awarded for the most outstanding paper contributed to the *South African Medical Journal* in any one year by a general practitioner, who must either be in active general practice or his paper must be based on experiences gained in general practice.

Honorary and Emeritus Membership: The By-Laws were altered at the meeting of the Council held in October 1950, by which Honorary Membership is confined to 'those persons eminent in science in the Union of South Africa who are not legally qualified medical practitioners, if in the opinion of the Council they have made valuable contributions to the advancement of medical science'. So far no persons have been elected to this form of membership. A new form of membership known as Emeritus Membership has been devised for 'members of the Association who have reached a retiring age and who have been members in good standing for the major part of their professional careers and who, in the opinion of a Branch or Group, have served the Association actively and faithfully'. Dr. G. F. Fismer of the Border Branch was elected an emeritus member in October 1950, and Dr. F. H. Dommisse of the Cape Western Branch and Prof. A. Pijper of the Northern Transvaal Branch were similarly honoured at the meeting of the Council held in April 1951.

Federal Council Meetings: Two meetings of the Council were held during the past year, both being in Johannesburg. The first took place from 12 to 14 October 1950 and the second from 12 to 14 April 1951. On each occasion the volume of business has necessitated additional sessions in the evenings although the five-minute limit for speakers has been continued. The average attendance has been 34.

The *Executive Committee* has met on two occasions before the Council meetings, but has continued to do most of its business between meetings by correspondence.

The *Annual General Meeting* was held in Johannesburg on 12 October 1950. The President and 33 members were present, while 19 proxies were presented. The usual business was transacted.

Congress: No Congress was planned to take place during the year under review as the Joint Meeting with the British Medical Association was to be held in Johannesburg in July 1951. Members will be aware that this meeting was cancelled by the British Medical Association. The circumstances leading up to this decision were made known through the columns of the *Journal*.

Presidency of the British Medical Association: Following the cancellation of the Joint Meeting, the British Medical Association invited the President of our Association, Dr. A. W. S. Sichel, to become its President for the year 1951–1952. Dr. Sichel left for London during May and was installed as President of the British Medical Association on 15 June 1951. The news that Dr. Sichel had been invited to accept this high honour was received with great satisfaction throughout the Association.

Committees of Council: The Head Office and Journal Committee continues to render good service in looking after the administration and financial affairs of the Association. Its work has grown considerably as a result of increasing activity at the Head Office.

The work of the Central Committee for Contract Practice is also increasing and much time has been taken up with the preparation of a new Tariff of Fees for Medical Aid Societies to meet the present conditions of practice. The appointment of Dr. L. M. Marchand as Assistant Medical Secretary as from 1 July 1951 will do much to increase the efficiency of the work of this Committee as he will be able to devote a considerable amount of his time to this important aspect of the Association's affairs.

The Parliamentary Committee has been widened in its scope and has been made a full Committee of the Council, where previously it was a Sub-Committee of the Cape Western Branch which acted for the Council on occasions. It has taken over the work of the Standing Committee on Health Services in the Union.

Journals: The weekly publication of the *South African Medical Journal* continues to meet with success, and the *South African Journal of Clinical Science* is being published quarterly.

Dr. G. C. A. van der Westhuyzen will assume duty as Assistant Editor on 1 July 1951.

Branches and Divisions: The Branches continue to hold their regular meetings; but there is still a tendency for business of a medico-political nature to occupy a large part of the time of the meetings, often to the exclusion of clinical matters. It would seem that a solution to this difficulty would be the formation of more Divisions so that members might have an opportunity of meeting in smaller groups at hospitals for clinical discussion.

Groups: No new Groups have sought recognition this year. Those in existence have continued to carry on the scientific work of their own specialities and some have organized conventions for this purpose.

World Medical Association: The Association was represented at the Fourth General Assembly of the World Medical Association in New York in October 1950 by Dr. Harold O. Hofmeyr.

British Commonwealth Medical Council: No Conference has been held during the year under review, and that which was to have taken place in Johannesburg in July 1951 was cancelled at the same time as was the Joint Meeting.

Provincial Hospitalization: *Cape*:—The honorary system has continued to operate in all the hospitals under the Cape Provincial Administration other than the teaching hospital at Groote Schuur where certain part-time and full-time appointments are being made as joint appointments between the University of Cape Town and the Provincial Administration. Representatives of the Association have been asked to serve on the Appointments Committee. Rules for the election and laying down the powers of Medical Committees, which were drawn up by the Liaison Committee, have since been gazetted.

Transvaal: The full-time and part-time appointments made under the Public Hospitals Ordinance (Transvaal) 1946 still operate. The honorarium of £50,000 which was divided amongst those honoraries who served the Administration during the interim period was paid on 31 March 1951. A number of the honoraries concerned have donated their shares to the Association's Benevolent Fund.

Orange Free State: There has been no change in the position in this Province.

Natal: No changes have taken place in the medical services of the Provincial hospitals pending the report of a Commission of Inquiry which was set up by the Natal Provincial Administration.

Finance: The funds of the Association were increased at the end of 1950 by a profit of £4,860 on the year's working. The finances generally show stability and every endeavour is made to render to members the maximum service with the greatest efficiency at the minimum cost. The accumulated funds now stand at £29,188.

The Benevolent Fund has been able to assist an even larger number of persons during the past year and now has 22 beneficiaries. The need for larger sums for disposal as allowances has led the Federal Council to determine that, in addition to the interest on investments, a like amount may

be taken from current contributions for distribution. The invested capital of the Fund now stands at £30,122. The amount recently received in the form of donations from honorary medical officers in the Transvaal, to which reference is made above, is to date £6,386. The contributions of members are much appreciated and are gratefully received.

Library Grants: Grants to the Universities of Cape Town and the Witwatersrand, amounting to £250 each, were made during the year, and members are reminded that the facilities of both libraries are available to them either by personal visit or by postal inquiry.

Medical Agencies: The work of the Medical Agency in Cape Town is making steady progress and the members in the area served by it have shown great appreciation of the efforts made on their behalf. The Medical Agency in Johannesburg has not been as fortunate in the support it has received from the members in the Transvaal, but it is hoped that this state of affairs will improve during the coming year. An Agency has recently been opened at the office of the Natal Coastal Branch in Durban and it is confidently anticipated that this will receive support from the Natal members of the Association.

Medical Insurance Agency: Little expansion has taken place in this department during the past year, mainly owing to pressure of other business, and members are reminded that should they wish to undertake any form of in urance, the Agency is ready and willing to assist them. Their co-operation will help the Association by the accrual of earned commission.

In conclusion the Council records its appreciation of the work of the Head Office and Journal staff and of all honorary officials and Committees of the Association.

R. Theron,
Vice-President.

Bloemfontein.
3 July 1951.

PASSING EVENTS

Transvaal Golfing Society of the Medical Association

Results of the Competition, held at Germiston Golf Course on Sunday 3 June 1951, for the Four-Ball—Better-Ball Cup presented by Dr. J. van Niekerk:—

The major event was a better-ball Stapleford, but in addition, various individual competitions were run simultaneously.

The proceeds of the Competition are to be sent to the Central Medical Benevolent Fund at the express wish of the donor of the Cup.

The prizes were donated through the generous co-operation of the Medical Exhibitors Association.

Winners of Cup: Dunning, E. K., Turton, E. W.	39 Stapleford.
Runners Up: McKenzie, D. E., Nel, J. G.	38 Stapleford.
Third Best: Wolpe, I. T., Newman, J.	36 Stapleford.
Booby: Kerry, B., Goldberg, A. M.	22 Stapleford.
Individual Best Gross: Girdwood, W.	82
Individual Second Best Gross: van der Spuy, D.	85
Individual Best Nett: Wolpe, I. T.	76
Individual Second Best Nett: Gottlieb, L.	78
Individual Sealed Nine Holes: Bader, B.	35

Emergency Medicine Depots in the Transvaal

Elsewhere in this *Journal* an advertisement appears drawing the attention of the medical profession to the Transvaal Chemists' Emergency Depots (Pty.) Ltd., services.

Following the abolition of the privileged hours applicable to the trading of chemists on Wednesdays, Sundays and Public Holidays, the Southern Transvaal Branch of the Pharmaceutical Society of South Africa gave the then Administrator of the Transvaal its undertaking that it would cater for the urgent after-hour medicinal requirements of the public.

In pursuance of this undertaking a Company was formed in which all the profits that accrue are used to establish depots at various focal points in the area of jurisdiction. This service is administered by a Board of Directors elected by the Southern Transvaal Branch of the Pharmaceutical Society in an honorary capacity. Since the inception of an Emergency Medicine Depot in 1942 the service has received the wholehearted support of the general public. To date there are six Emergency Medicine Depots situated at key points in Johannesburg and one in Germiston, Springs, Benoni, Brakpan and Pretoria.

It is the policy of the Pharmaceutical Society to cater for the urgent after-hour medical requirements of the public. The existence of official depots together with the practice of chemists and druggists showing their residential addresses and telephone numbers on their premises, offer the general public ample facilities to obtain any kind of urgent medicine in case of need. In the country areas with sparse populations, the individual chemist caters for the after-hour requirements of the public.

In drawing the attention of medical practitioners, particularly in the Johannesburg, Reef and Pretoria areas, to the collective effort, it is hoped that medical practitioners will support this entirely voluntary service, especially as there has been a tendency for chemists and druggists in the last few years to operate so-called night dispensaries from which goods which cannot be considered or classified as urgent, were and are being displayed and sold. Most chemists do not wish to embark upon a type of night business which the vast majority of chemists do not want and consider undesirable from every point of view.

The whole idea of the officially sponsored medicine depots is to try to give the public and the medical profession the service to which they are entitled, but at the same time to try to give each working chemist and druggist an opportunity to enjoy his after-hour leisure.

Night services are operated in such a manner that all repeat prescriptions can be carried out by the patient's own chemist and druggist, i.e. prescriptions are returned (except in the case of habit-forming drugs) and every effort is made so that the operation of such depots is guided by the principle of service before self. It is hoped that the closely allied medical profession will not only find the depot service useful, but worthy of moral support.

* * * *

Prof. Alan Moncrief, Nuffield Professor of Child Health, University of London and Director of the Institute of Child Health, Hospital for Sick Children, Great Ormond Street, London, is visiting South Africa and will be in Cape Town from 23–27 July 1951.

Professor Moncrief will lecture on *Problems of Growth*, in the Physiology Lecture Theatre, Medical School, Mowbray, on Wednesday, 25 July, at 8.15 p.m.

* * * *

Campbell Cup Golf Competition. The annual competition for this cup was held at Worcester on 23 May 1951. There were 23 competitors and the competition was won by Dr. J. Luyt of Worcester with a score of 4 down, second was Dr. Retief of Cape Town with 5 down and Dr. Luyt, Snr., of Worcester with 6 down, was third. As the competition was played in a very strong wind, the winner's score was a creditable one.

The same evening a dinner was arranged by the Worcester Division of the Cape Western Branch at which Dr. Goldschmidt gave a talk on various clinical experiences of his. He was followed by several speakers and the dinner was pronounced a great success by all present. It was hoped that a precedent of a golf competition, followed by a clinical evening, could be set for the future.

As a result of this event the Benevolent Fund has benefited to the extent of £4 5s., and the Branch wishes to express its sincere thanks to Dr. Hamilton Bell for organizing this most successful competition.

* * * *

Appointment of Dr. H. S. Gear to the World Health Organization. Dr. Gear has accepted an invitation from the Director-General of the W.H.O. in Geneva to join his staff as Assistant Director-General. This honour has fallen to a colleague who is held in the highest esteem by those who have been associated with him in the past. Not only has he served the Cape Western Branch as a member of its Branch Council and Chairman of the Parliamentary Committee, but he has also been a member of the Federal Council of the Association. On behalf of the Association, the Cape Western Branch wishes to express their appreciation of his work and extend their heartiest congratulations on his well-deserved appointment.

CORRESPONDENCE

CARBON TETRACHLORIDE POISONING BY INHALATION

To the Editor: May I be allowed to offer a few remarks in connection with Dr. J. J. Prag's highly interesting case of 'Carbon Tetrachloride Poisoning by Inhalation' published in the *Journal* of 26 May 1951.

The chemical formula for carbon tetrachloride is CCl_4. Like chloroform ($CHCl_3$), it is a well-known narcotic poison. Because of its high volatility, carbon tetarachloride forms phosgene at high temperatures in the presence of air. Some authorities also hold that the toxic action resulting from the inhalation of carbon tetrachloride vapour is due to the formation of phosgene in the blood and the tissues, according to the formula:

$$CC_4 + H_2O = COCl_2 + 2HCl$$

(Carbon tetrachloride) (Phosgene)

Furthermore, phosgene and chlorine act on the respiratory passages by virtue of their solubility (however slight) in water:

$$Cl_2 \text{ (Chlorine)} + H_2O = 2HCl + \text{nascent } O_2$$

$$COCl_2 \text{ (Phosgene)} + H_2O = 2HCl + CO_2$$

Solubility of toxic chemicals in water broadly parrallels their solubility in body fluids. Because chlorine is more soluble in water that phosgene, *immediate* irritation by the liberated HCl is set up in the upper respiratory passages so that a warning note, in the way of a spasm of the glottis with its resultant paroxysm of coughing accompanied by difficulty in breathing and attempted talking, is sounded, allowing the person to escape from the contaminated atmosphere. Phosgene, being far less soluble in water, passes on its unimpeded way to the alveoli, there liberating the HCl which is responsible for the irritation resulting in oedema of the lungs as late as 24 hours after inhalation.

Minot believed that alcoholism is a predisposing factor to carbon tetrachloride poisoning and it would seem that His Majesty's Inspector of Factories in the United Kingdom has taken due note of this by forbidding the issue of a pint of beer to employees engaged in the manufacture and filling of fire extinguishers (*Annual Report of the Chief Inspector of Factories*, 1946, p. 57).

It seems also to be generally agreed that smoking in the presence of carbon tetrachloride is hazardous. Lastly, the most recent international figure agreed upon for the maximum allowable concentration of carbon tetrachloride in the atmosphere is 40 p.p.m.

It is disappointing that a more detailed history immediately before admission to hospital was not given in the description of this case, but it might be logical to visualize a man, rather fond of his alcohol, complacently smoking his pipe whilst cleaning electrical equipment with a carbon tetrachloride spray in a closed, ill-ventilated room, on one of the hottest days of the year (1 December), thereby initiating a train of events which ultimately proved fatal.

Joseph B. Lurie,
Resident Medical Officer.

Klipfontein Organic Products Corporation,
P.O. Chloorkop,
Via Johannesburg.
6 June 1951.

CYBERNETICS

To the Editor: The so-called science of Cybernetics, to which your leading article of 26 May 1951 is devoted, starts from the observation that electronic calculating machines display some of the characteristics of human mental process, and goes on to postulate that the central nervous system functions in the same way as those machines, although on a grander and more complicated scale. It is true that the scientist does his work by constructing models of the particular aspect of nature with which he is concerned, although his models are more often conceptual or symbolical than material; and there is therefore no inherent absurdity in the idea that a machine like Eniac may point the way to the solution of some of the problems of neurophysiology.

The difficulty is that a model that duplicates one aspect of brain functioning must be capable of duplicating every other aspect as well before it can inspire confidence that it has revealed even one of the many secrets of the brain. Consider memory, for example. Electronic calculators are said to 'remember' the results of one stage in a calculation until they are required at a subsequent stage, this being effected by a particular application of the 'feed-back' principle. Cyberneticists have, not unnaturally, suggested that human memory may depend on a different application of the same principle, and have pointed to the closed reverberating circuits revealed by neurophysiological research as the possible mechanism of memory.

But there are certain important differences between human memory and the 'memory' of the machine. For one thing, human memory is built up by a gradual process, in the course of which the probability of accurate reproduction increases, and the latent period between the demand for reproduction and the actual reproduction diminishes. In contrast to this the machine is capable of reproducing the whole of the stored information at any time after the appropriate feed-back circuits have been established, and there is no systematic variation in the latency of its response to the demand.

Another difference is that as soon as the machine has solved one problem and a new one has been set up, its 'memory' of the information obtained in the previous problem is completely and finally obliterated, whereas human memory is apt to persist in spite of radical changes in the kind of work the brain is called upon to perform. The machine loses its 'memory' for good if there is a temporary suspension of the current flowing in the feed-back circuits, but a general depression of brain activity, as in deep anaesthesia, causes nothing more than a slight retrograde amnesia. If memory depends on action potentials coursing continuously round closed internal circuits, anaesthesia must suspend the activity in many of these circuits and therefore cause a widespread disturbance of memory.

These examples are sufficient to raise serious doubts as to the value of Cybernetics. But the full measure of the absurdity of the doctrine is most clearly brought out by the suggestion that the treatment of circulation disorders in the electronic calculator may point the way to new measures for the treatment of certain disorders of the brain. Let us assume for a moment that Eniac does actually work like a brain. Then the most appropriate person to treat it when it develops a functional disorder is a psychiatrist. Functional disorders of the brain are frequently cured by passing an electric current through the brain; so why not pass a high-tension current through Eniac when it turns temperamental? The guardians of Eniac would undoubtedly suspect the sanity of anyone making such a suggestion. And yet the converse proposal, that methods of treatment suitable to Eniac should be tried on Man has been seriously put forward by a writer who presumably was judged to be sane at the time when his book was accepted for publication.

The truth of the matter is that Cybernetics is not a science at all but a cheap and short-sighted attempt to explain the working of the brain without submitting to the gruelling discipline that any genuine science imposes on its students. The secrets of the brain will never be revealed to scientific charlatans; they will finally emerge only as a result of the joint labours of workers in several related scientific fields, ranging from neurophysiology at the one end to behaviour science at the other.

J. G. Taylor.

Department of Psychology,
University of Cape Town,
Rondebosch.
8 June 1951.

at the very first sign of a cold

its development—

antihistaminic therapy has been reported to abort the development of the common cold in 90% of the patients commencing therapy within the first hour of the appearance of symptoms.[1]

distressing symptoms—

antihistaminic therapy shortens the duration and decreases the severity of an established cold.[1-3]

spread of infection to others—

the elimination of sneezing, lacrimation, rhinorrhoea and coughing reduces cross-infection.[1]

CORICIDIN

(Antipyretic-analgesic-antihistaminic)

combines the classical "A.P.C. formula" (Acetylsalicylic acid 3·5 gr., Acetophenetidin 2·5 gr. and Caffeine 0·5 gr.) with *Chlor-Trimeton** the antihistaminic with minimal side-effects and greater effectiveness in doses as low as 2·4 mg.[5]

The Allergic Concept of the Common Cold: The symptoms of upper respiratory infections closely resemble those found in vasomotor rhinitis and hay fever. More histamine-like substances were found in the nasal secretions of persons suffering from colds than in allergic rhinitis.[4]

Dosage and Timing: Two CORICIDIN Tablets *at the very first indication* of a cold, then one tablet every three or four hours for three or four days. In established colds, one tablet every three or four hours for palliative effect.

Packing: CORICIDIN Tablets, tubes of 12, bottles of 25 and 100.

Bibliography: 1. Brewster, J. M.: Indust. Med. *18*:217, 1949. 2. Murray, H. C.: Indust. Med. *18*:215, 1949. 3. Tislow, R. and others: Federation Proc., Part I, *8*:338, 1949. 4. Troetscher-Elam, E.; Ancona, G. R., and Kerr, W. J.: Am. J. Physiol. *145*:711, 1945.

*T. M. Schering Corporation.

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JOHANNESBURG

Medical House, 5 Esselen Street. Telephones 44-9134-5
Mediese Huis, Esselenstraat 5. Telefone 44-9134-5

PRAKTYKE TE KOOP : PRACTICES FOR SALE

(Pr/S26) Suid-Westelike Transvaalse plattelandse praktyk in hospitaal dorp. Bruto inkomste £2,400 p.a. Premium £2,000.
(Pr/S27) Practice in Bloemfontein in deceased estate. Net income £1,000 p.a. This income does not indicate the size of the practice as the late principal was not concerned with the business side thereof. Premium £500 or near offer.
(Pr/S28) Pretoria practice. Present income £2,500 p.a. This is an excellent opportunity for young practitioner. Premium £1,000.
(Pr/S29) O.V.S. Uitstekende eenmanspraktyk in dorp met goeie hospitaalaangeleenthede. Medisyne word voorgeskryf. Gemiddelde jaarlikse bruto inkomste £5,183. Een-sesde van inkomste word uit snykunde verkry. Twee aanstellings op die oomblik aan praktyk verbonde. Betaling kan gereël word.

* * * *

CAPE TOWN : KAAPSTAD

Medical House, P.O. Box 643, Cape Town. Telephone 2-6177
Mediese Huis, Posbus 643, Kaapstad. Telefoon 2-6177

PRAKTYKE TE KOOP : PRACTICES FOR SALE

(365) North-west Cape. Two appointments held. Unopposed. Premium £550. House and surgery at low rentals. Small nursing home. Afrikaans community.
(636) Cape Town suburban practice. Non-European. Rental for house £5 p.m. (Quote also **700**.)
(706) Suidwestelike Kaapland naby kus. D.S. aanstelling. Geen opposisie. Premie verlang ongeveer £750. Paaimente kan gereël word. Huisvesting beskikbaar. Goeie kans vir uitbreiding.
(746) Large dispensing practice, mainly non-European. Average annual cash receipts approx. £5,200. £5,500 required for premium, drugs and surgery furniture. Details on application.
(350) Eastern Cape hospital town. Total gross receipts for preceding 13 months £3,700. One appointment. Premium of £2,000 includes drugs, surgery furniture, fittings, etc. House for sale at £3,000. Large bond available. £700 rebate if appointment not transferred. Practice offers great scope for practitioner with surgical ability.
(644) Durban Central. Mainly Indian and Native cash practice. Average annual gross income £1,235. Premium of £500 required for goodwill, inclusive of furniture and fittings and drugs. Terms may be arranged.

ASSISTENTE/PLAASVERVANGERS VERLANG
ASSISTANTS/LOCUMS REQUIRED

(640) Gentile assistant for Transkei general practice with D.S. appointment. Single man preferred. Excellent opportunity to gain sound experience.
(723) S.W. Cape. Assistant required—with possibility of partnership—for practice in hospital town. £75 p.m. Car provided for use in practice. Dwelling available.
(730) Durban. Immediately for one year. Gentile Protestant woman assistant required for general practice including surgery, midwifery and gynaecology.
(754) For Transkei Native and D.S. practice. Initial salary £60 p.m. and all found. Definite view to partnership after trial period. Single man preferred.

MEDICAL EQUIPMENT FOR SALE

(758) Electrocardiograph. Sanborne Cardiette. Weight 24 lb. Perfect working condition. Used by Cape Town specialist physician. £160 or nearest offer.

CONSULTING ROOMS

(761) Cape Town. Rooms are available to share in centre of city.

Jaxly Manufacturing Co. (S.A.) Pty. Ltd.

OF

53 LENNOX STREET, KIMBERLEY

MEDICAL BENEFIT SCHEME

Applications are invited from a registered medical practitioner to attend the employees of the above factory on a part-time basis at Benefit Society rates.

University of Cape Town

DIPLOMA IN PUBLIC HEALTH

Application for admission to the post-graduate course for the Diploma in Public Health in 1952 must reach the undersigned not later than 15 December 1951. The course which extends over a period of one academic year (March to November) is open to candidates who have held a medical qualification registrable by the South African Medical and Dental Council for a period of not less than one year.

Further particulars may be obtained from the Registrar, University of Cape Town, Private Bag, Rondebosch, C.P.

Specialist in Physical Medicine

PART-TIME APPOINTMENT

Applications are invited for the position of part-time Specialist in Physical Medicine to the City Council Employees' A.T.C. Benefit Society.

Remuneration on a per capita basis as approved by the Contract Practice Committee of the Medical Association, Johannesburg.

For further particulars apply to the Secretary, City Council Employees A.T.C. Benefit Society, 508 Africa House, Rissik Street, Johannesburg.

Locum Required

In large hospital town near Kimberley, from 1 April 1952 for a period of 12 months. Salary £75 per month, car and petrol provided for use in practice. Dwelling provided for single person. Applicant must be fully bilingual. Write 'A. H. H.', P.O. Box 643, Cape Town.

Partnership Offered

Cape Peninsula. Jewish doctor, able to operate, in practice established 25 years. Must be competent in medicine. Write 'A. H. I.', P.O. Box 643, Cape Town.

For Sale

Thoroscope. Cutler Model. Complete with inspection and operating telescopes. Diathermy electrodes and all accessories. Write 'A. H. K.', P.O. Box 643, Cape Town.

Town Council of Worcester

VACANCY: ADDITIONAL CLINICAL MEDICAL OFFICER

Applications are invited from duly qualified medical practitioners for the above appointment.

The successful applicant will be required, under the direction of the Medical Officer of Health, to carry out the professional duties connected with the various mobile and established clinics, hospitals and places of isolation maintained or undertaken by the Council.

The salary scale attaching to the post is £720 × 30—£900 × 40—£1,020 per annum, plus cost-of-living allowance. The commencing salary within the grade will be determined in accordance with the qualifications and experience of the successful candidate and preference will be given to applicants with experience in the treatment of infection diseases or who hold the Diploma of Public Health.

The successful candidate will be required to serve a probationary period of six months and, upon confirmation of appointment by the Council, to contribute to the Worcester Municipal Pension Fund, the rules of which provide for the transfer of pension values. Service will be subject to termination by notice of one month, on either side.

Applications, stating age, qualifications, experience, earliest date duties can be assumed, as well as the names of two professional persons for reference purposes, and accompanied by a personal statement of health, will be received by the undersigned not later than Friday, 27 July 1951.

Canvassing, directly or indirectly, will disqualify a candidate.

(Notice No. 46/51) C. Myburgh
4 July 1951 (7384) *Town Clerk*

Provincial Administration of the Cape of Good Hope

(HOSPITALS DEPARTMENT)

VACANCY: ASSISTANT HONORARY RADIOLOGIST

Applications are invited from suitably qualified persons for appointment to the post of Assistant Honorary Radiologist to the Radiological Department of the Provincial Hospital, Port Elizabeth.

The appointment will be of five years' duration but may be renewed thereafter.

Applications, containing full particulars of qualifications, etc., must be addressed to the Medical Superintendent of the Provincial Hospital, Port Elizabeth, to reach his office not later than 14 August 1951.

Port Elizabeth C. G. Keyter
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